SONY

3-754-827-41(1)

English

Español

中文

عربي

Video Cassette Recorder

Operating Instructions
Manual de instrucciones
使用説明書

SLV-X600

VHS
PAL NTSC

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WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

Caution
Televison programs, films, video tapes and other materials may be copyrighted.
Unauthorized recording of such material may be contrary to the provisions of the copyright laws.

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Precautions

On safety

- Operate the unit only on 110V – 240 V AC, 50/60 Hz.
- Should anything fall into the cabinet, unplug the unit and have it checked by qualified presonnel before operating it any further.
- Unplug the unit from the wall outlet if it will not be used for an extended period of time. To disconnect the cord, pull it out by the plug. Never pull the cord itself.
- The unit is not disconnected from the AC power source as long as it is connected to the AC power outlet, even if the unit itself has been turned off.
- The nameplate indicating operating voltage, power consumption, etc. is located on the rear of the unit.

On installation

- Allow adequate air circulation to prevent internal heat build-up.
- Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation slots.
- Do not install the unit near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- The unit is designed for operation in a horizontal position. Do not install it in an inclined position.
- Keep the unit and cassette tapes away from equipment with strong magnets, such as microwave ovens or large loud speakers.
- Do not place any heavy object on the unit.

On operation

- When the unit is not in use, turn the power off to conserve energy and to extend the life of the unit.
- Remove and store video cassettes after recording or playback.
- Store the cassettes in their cases and keep them in an upright position to prevent intrusion of dust and uneven winding.

On moisture condensation

If the unit is brought directly from a cold to a warm location, moisture may condense on the video head drum. In this condition, the tape may adhere to the head drum and cause serious damage to the head. To avoid damage caused by moisture condensation, be sure not to leave a cassette inside the compartment when the unit will not be used. When the unit is first installed, or when it is moved from a cold to a warm location, wait for about 2 hours before operating it so that its temperature becomes identical to the room temperature.

On cleaning

Clean the cabinet, panel and controls with a dry soft cloth, or a soft cloth slightly moistened with a mild detergent solution. Do not use any type of solvent, such as alcohol or benzine, which might damage the finish.

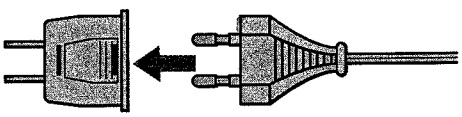
On repacking

Do not throw away the carton and packing materials. They make an ideal container in which to transport the unit. When shipping the unit to another location, repack it as illustrated on the carton.

If you have any question about this unit, contact your Sony service facility.

Use of the supplied AC plug adaptor

If the plug dose not fit into the wall outlet, use the supplied AC plug adaptor.



How to Use This Manual

This manual has five chapters: **Introduction, Getting Started, Basic Operations, Advanced Operations, and Additional Information.**
For information about the VTR's basic operations, such as Playback, Recording, and Timer-Activated Recording, see **Chapter 3 Basic Operations.** If you are already familiar with the basic operations, see **Chapter 4 Advanced Operations.**

Using the manual

This manual mainly explains the operations using the Remote Commander. If the operation can be done on the VTR as well and the name of the button on the VTR differs from that on the Remote Commander, the name of the button on the VTR is in the parentheses.

Overview of the VTR

The VTR features various convenient functions for playback, recording and editing. For example, quick and easy access is a "must" during playback and editing; therefore, this VTR incorporates the DUAL MODE SHUTTLE ring. You can easily advance and rewind the tape to locate a desired scene by simply turning the ring.
This VTR also incorporates the AUTO MENU function which allows you to assign a series of automatic tape operations.
Auto head cleaner equipped cleans the video heads each time a cassette is loaded or unloaded.

Color systems of the VTR

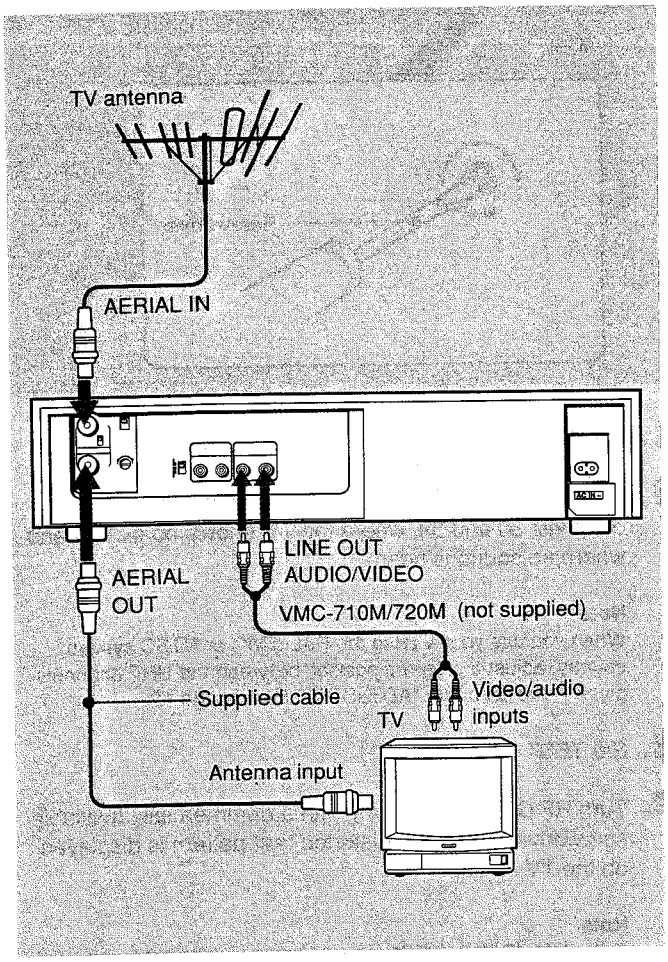
The VTR is designed to receive TV programs based on the PAL (B/G, I and D/K), SECAM (B/G and D/K) and NTSC3.58 color systems and to record and play back using these systems.
The VTR also records line input signals and plays back the PAL, MESECAM, NTSC3.58 and NTSC4.43 systems, but is not designed to receive French TV broadcasts.

Connections

Turn all the power off before making connections. Connect the AC power cord last.

Connecting an Antenna and a TV

Whenever you view video pictures as well as TV program on your TV screen, connect an antenna and a TV as shown.



1. Disconnect the antenna from the antenna input terminal of the TV, and connect the antenna to AERIAL IN of this VTR.
2. Connect AERIAL OUT of this VTR to the aerial input terminal of the TV, using the supplied antenna cable.

Note
Connect the plug firmly to avoid picture distortion.

When your TV is equipped with the video/audio input jacks

In addition to the antenna connection, connect them to LINE OUT AUDIO/VIDEO of the VTR using the VMC-710M/720M cable (not supplied). In this way, you can get a higher quality picture.

Preparing the Remote Commander

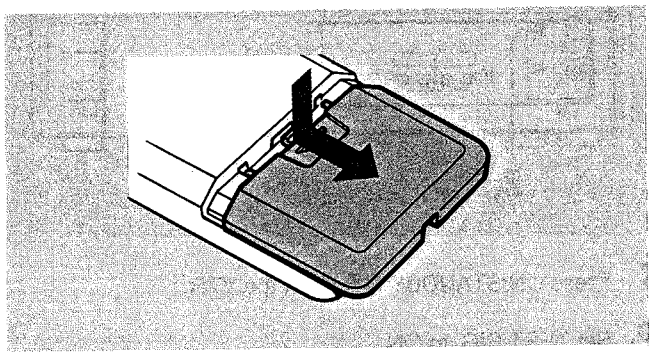
Before using the supplied Remote Commander, insert the correct batteries into the Commander.

How to use the Remote Commander

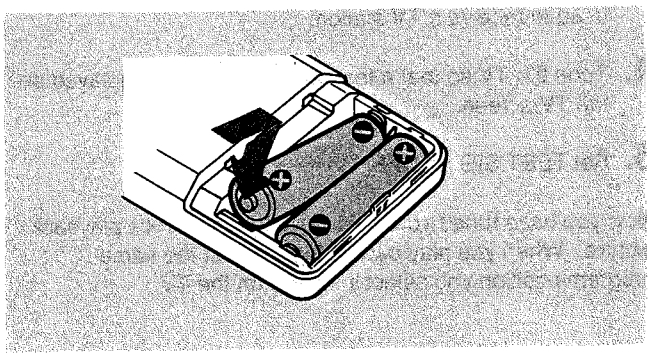
When you operate the VTR using the Commander, point it to the remote sensor of the VTR. For the location of the remote sensor, see "Labeling Parts and Controls" on page 26.

Inserting Batteries

1. Slide and remove the cover.



2. Insert two R6 (size AA) batteries with the polarity positioned correctly.

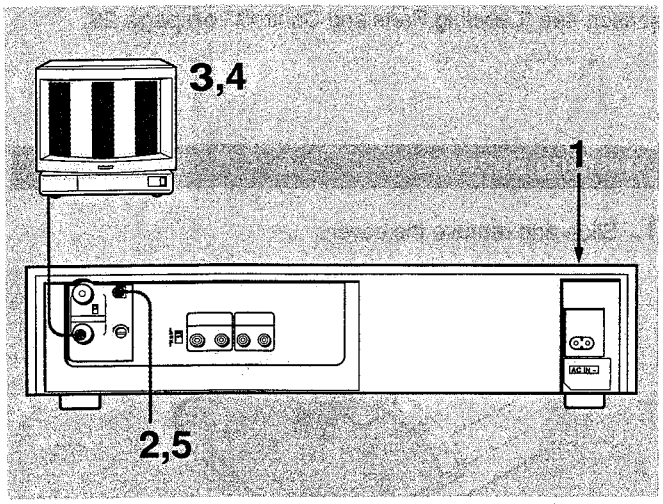


3. Close the cover.

Note on batteries
With normal operation, batteries will last for about six months.
If the Commander will not be used for a long period of time, remove the batteries to avoid possible damage from battery leakage.

Adjusting the TV

If you have connected your VTR and TV using only the aerial sockets, you have to adjust one of the television program positions to receive the VTR's signals.
If the TV-VTR connection is made using the video/audio jacks, skip this step.



1. Press ON/STANDBY to turn on the VTR.

2. Set TEST SIG. to ON.
The test signal is transmitted on a channel between UHF channels 30 and 39.

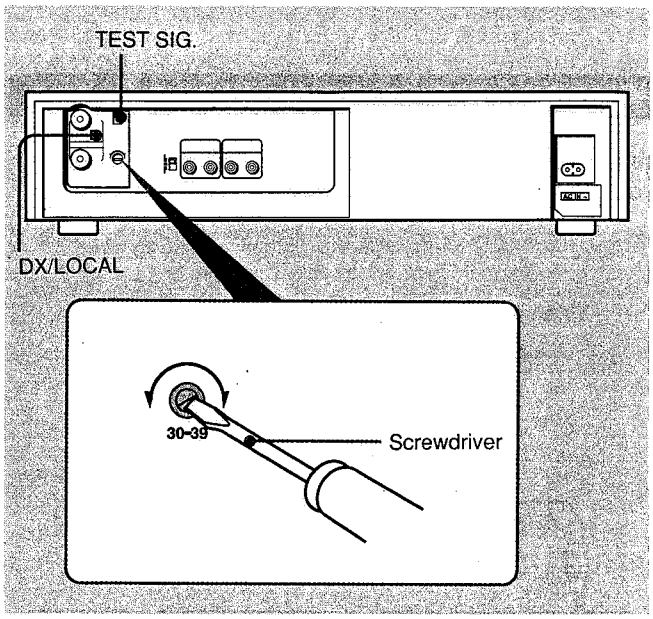
3. Turn on the TV and select a program position that is not used to receive a TV station.

4. Tune the TV so that a test pattern is clearly displayed on the TV screen.

5. Set TEST SIG. to OFF.

Now you have tuned your TV to receive the VTR's playback picture. When you play back a tape, select the same program position you select in step 3 on the TV.

When the test pattern is not free of disturbance



1. Set TEST SIG. to OFF.

2. Adjust a program position on the TV between UHF channels 30 and 39, where the TV shows no picture and where no sound is heard.

Note
When you use your VTR in the PAL (D/K) or NTSC system country, adjust a program position between the UHF channels given in the list under "ADJUSTABLE" on page 12.

3. Set TEST SIG. to ON.

4. Turn RF CHANNEL slowly with a commercially available screwdriver until an undistorted test pattern is displayed on the TV screen.

Note
In the PAL (D/K) or NTSC system country, adjustable range of the RF CHANNEL screw is between the channels listed on page 12.

5. Set TEST SIG. to OFF.

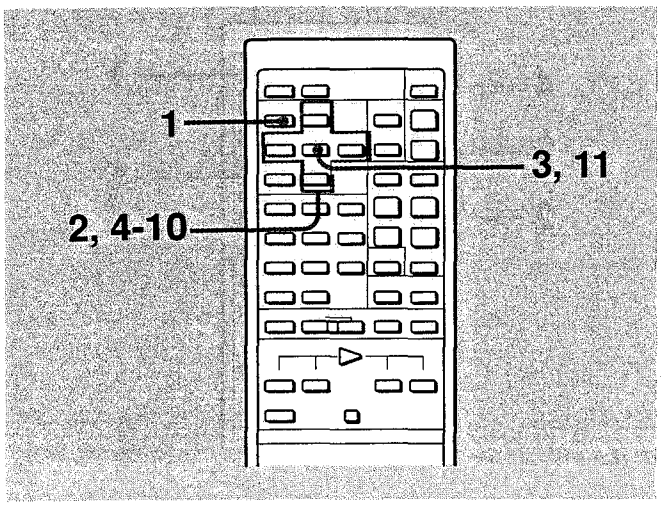
If the TV signal is too strong
Set the DX/LOCAL switch to LOCAL. Normally, set this switch to DX.

Setting Date and Clock

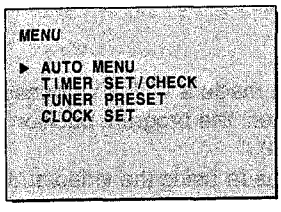
To be continued ►

Set the clock to the current date and time.
You can set them by calling up the menu on the TV screen.

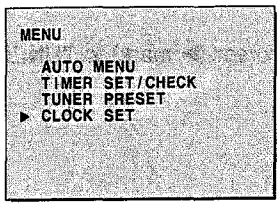
Example:
Sets the date and clock to 15:32, December 10, 1992.
Note that ▲ and ▼, used in the following procedure, move the cursor (► mark) or change the number, and ◄ and ► change the blinking item.



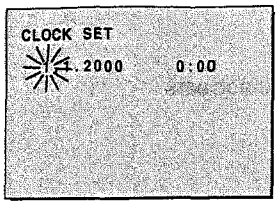
1. Press MENU.



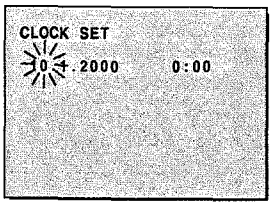
2. Press ▲ or ▼ to move the cursor to CLOCK SET.



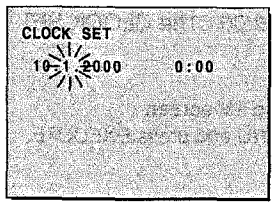
3. Press EXECUTE.
The CLOCK SET menu appears.



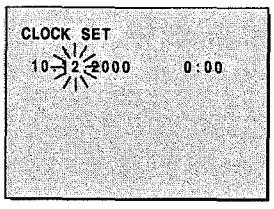
4. Press ▲ or ▼ until "10" appears in the day section.



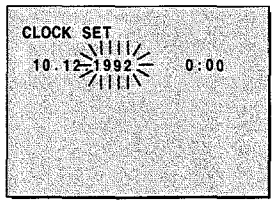
5. Press ► to make the next item (month) blink.



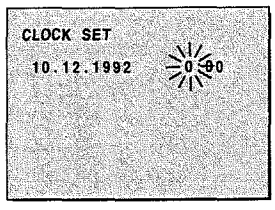
6. Press ▲ or ▼ until "12" appears.



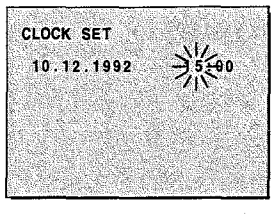
7. Press ► to make the next item (year) blink and press ▲ or ▼ until "1992" appears.



8. Press ► to make the next item (hour) blink.

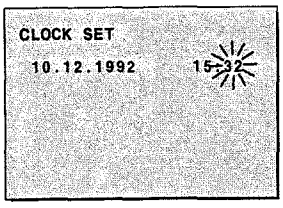


9. Press ▲ or ▼ until "15" appears.



Setting Date and Clock

10. Press ► to make the next item (minute) blink and press ▲ or ▼ until "32" appears.



11. Press EXECUTE simultaneously with a time signal. The clock will be set to 15:32:00. The CLOCK SET menu disappears.

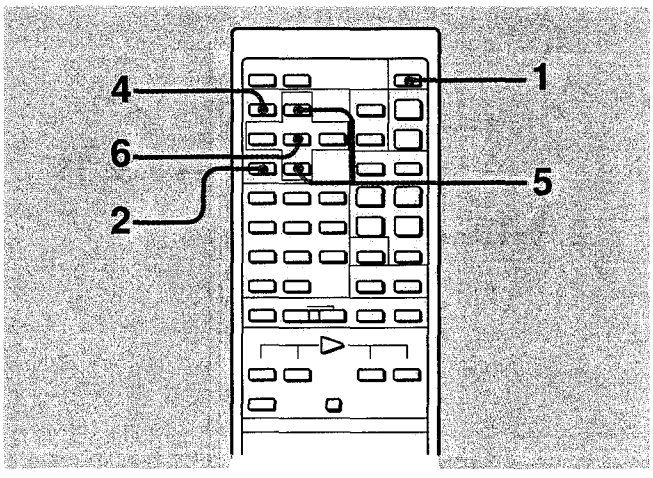
To recall the date and clock on the TV screen
Select CLOCK SET in the main MENU and press EXECUTE.

Note
You can set the clock except during timer recording, timer recording standby or quick timer recording.

Presetting the Active

To watch and record a TV program on the VTR, you have to preset channels. For presetting channels, call up the menu on the TV screen, then allocate the channels in your desired order.

Calling up the TUNER PRESET Menu



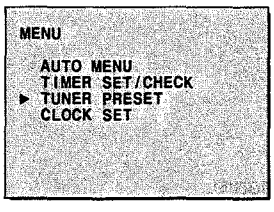
1. Press ⏻ (on/standby) to turn on the VTR.

2. Press INPUT SELECT to display the PROG indicator in the display window.

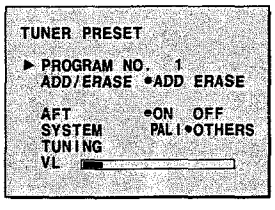
3. Turn on the TV. If you have made a VTR-TV connection using the aerial sockets, select the program position for video playback. (see page 6).
If a VTR-TV connection is made using the video/audio jacks, select the input for VTR on the TV.

4. Press MENU.
The main MENU appears on the TV screen.

5. Press ▲ or ▼ to move the cursor (► mark) to TUNER PRESET.



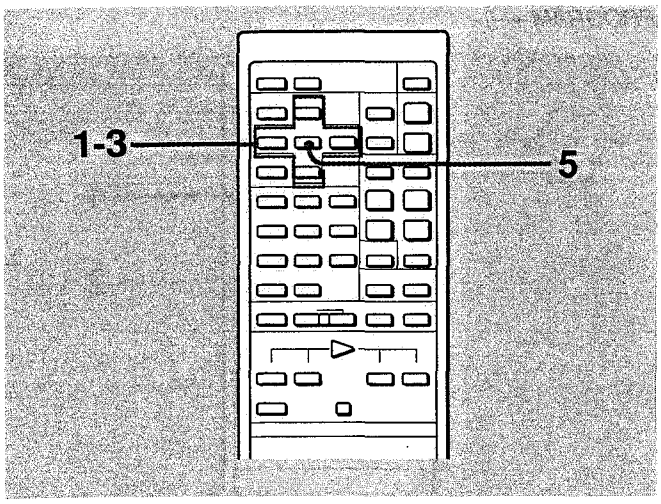
6. Press EXECUTE.
The TUNER PRESET menu appears.



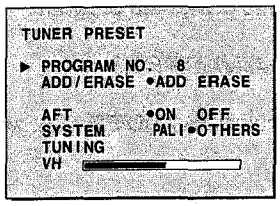
To be continued ►

Allocating Desired Channels

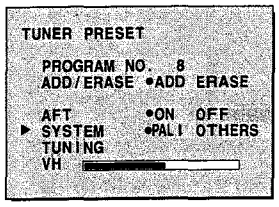
Tune a desired TV channel to any desired program position.



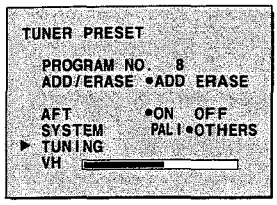
1. Press ◄ (to decrease number) or ► (to increase number) to select the desired program position.
You can also use PROG +/– (or PROGRAM +/–).



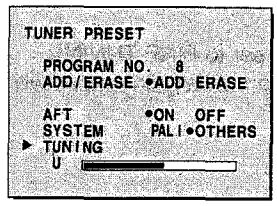
2. If you receive the broadcast based on the PAL I system, press ▲ or ▼ to move the cursor to SYSTEM, and move the dot to PAL I with ◄ or ►.
To receive the broadcast based on other color systems, move the dot to OTHERS.



3. Press ▲ or ▼ to move the cursor to TUNING.



4. Press ► (or ◄) to scan the channel.
Press ► for higher channel numbers, and press ◄ for lower channel numbers.
When the first channel is received, the picture of that channel appears for about 5 seconds, and then the TUNER PRESET menu reappears.
If you wish to allocate other channel, press ◄ or ► until the picture of that channel appears.



Channel scanning order on the VTR
The channel scans as follows according to the direction of the arrow.

VL (VHF low) ⇄ VH (VHF high) ⇄ U (UHF)

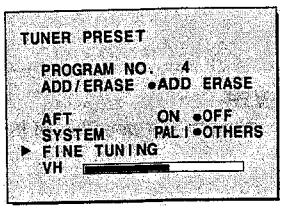
5. Repeat the above steps to allocate other channels to other program positions.

6. Press EXECUTE to store all the allocations.
The display returns to the original screen.

Presetting the Active Channels

When you cannot get fine tuning on a particular channel

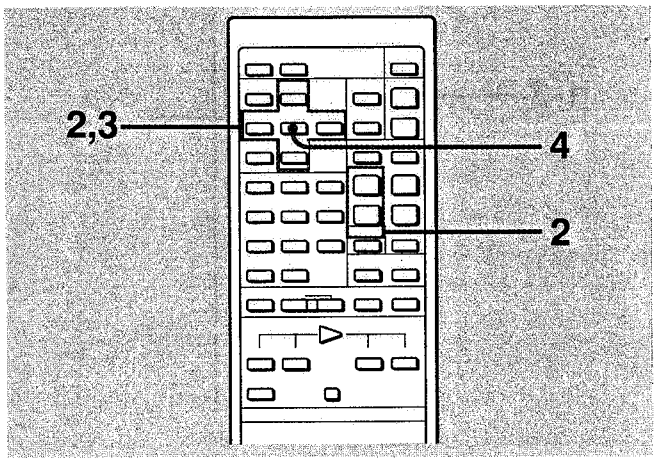
1. Call up the TUNER PRESET menu on the TV screen. (See "Calling up the TUNER PRESET Menu".)
2. Press PROG +/– to select the program position to be fine-tuned.
3. Press ▲ or ▼ to move the cursor to AFT (Auto Fine Tuning) and move the dot (• mark) to OFF using ▶. "FINE TUNING" will appear.
4. Press ▲ or ▼ to move the cursor to FINE TUNING. The picture that has been automatically fine-tuned will appear for a few seconds.



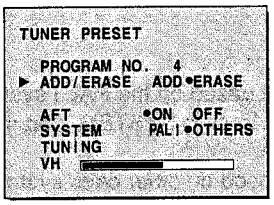
5. Press ◀ or ▶ until you can get the best picture.
6. Press EXECUTE to store the program position. The TUNER PRESET menu will disappear.

Erasing Unwanted Program Positions

You can preset the channels so that only the desired program positions appear when you press PROG +/– (or PROGRAM +/–).



1. Call up the TUNER PRESET menu on the TV screen. (See "Calling up the TUNER PRESET Menu".)
2. Press PROG +/– to call up the unwanted program position. You can also use ◀ or ▶ instead of PROG +/–.
3. Press ▲ or ▼ to move the cursor to ADD/ERASE, and select ERASE using ▶.

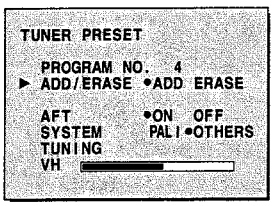


Repeat the above steps 2 and 3 to erase others, if you want.

4. Press EXECUTE. The original TV screen appears.

To enter the erased program position again

Select ADD instead of ERASE in step 3 above.



Setting the Color System

To be continued ►

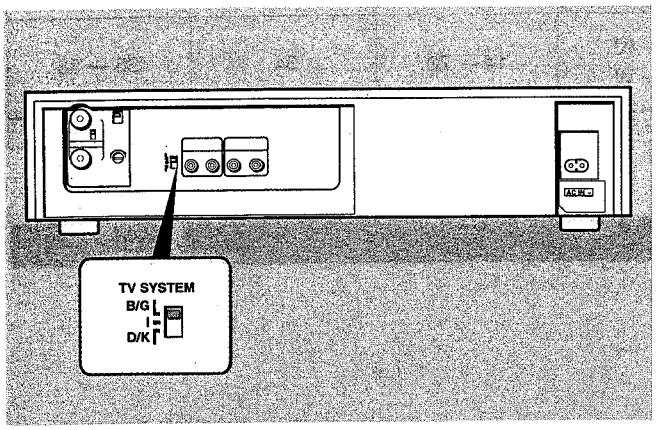
This VTR is designed to record and play back using the PAL (B/G, I, D/K), SECAM (B/G, D/K) and NTSC (M) systems. Before you begin recording, you need to set TV SYSTEM and COLOR SYSTEM SELECT, and for playback you need to set COLOR SYSTEM SELECT.

Before Recording

The VTR receives TV programs based on the PAL (B/G, I, D/K), SECAM (B/G, D/K) and NTSC (M) systems and records using these systems. The VTR also records the signals of the PAL, MESECAM, NTSC3.58 and NTSC4.43 systems input from the LINE IN connectors.
To record the programs, you need to set TV SYSTEM and COLOR SYSTEM SELECT according to the system to be recorded.

Setting the TV system

Set TV SYSTEM according to the TV system in your area.



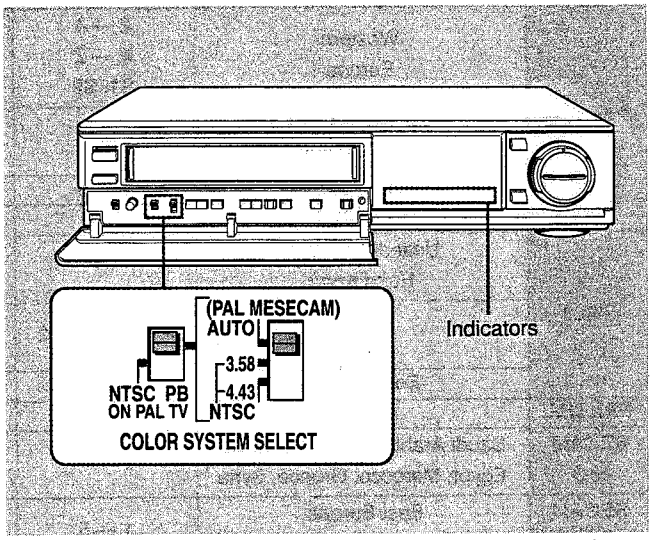
B/G: For TV programs based on the PAL B/G or SECAM B/G system
I : For TV programs based on the PAL I system
D/K: For TV programs based on the PAL D/K or SECAM D/K system

Notes

- There is no need to set TV SYSTEM for NTSC system.
- If you do not know the TV system used, set TV SYSTEM to the position at which audio can be heard. Normal audio cannot be heard if TV SYSTEM is set to the incorrect position.

Setting the color system

Set COLOR SYSTEM SELECT (AUTO/NTSC 3.58 /NTSC 4.43) according to the color system of the program to be recorded. The indicator of the selected system lights.



AUTO : To record TV programs based on the PAL or SECAM system
The PAL or MESECAM color signal is automatically selected.
NTSC3.58 : To record TV programs based on the NTSC3.58 system
NTSC4.43 : To record a video signal based on the NTSC4.43 system

Notes

- Normally, set COLOR SYSTEM SELECT (NTSC PB ON PAL TV) to the upper (AUTO) position. Set the switch to the lower position only when playing back the tape recorded in the NTSC system on a PAL TV.
- When the position of the COLOR SYSTEM SELECT switches is set to NTSC4.43 or NTSC PB ON PAL TV, the MENU displays are shown on the gray back color.

Setting the Color System

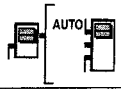
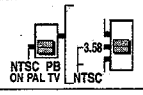
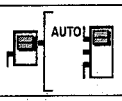
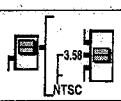
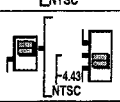
Channel coverage

SYSTEM	AREA	RECEIVING CHANNELS			OUTPUT SETTING BY RF CHANNEL SCREW	
		VL	VH	U	PRESET	ADJUSTABLE
PAL B/G	Western Europe	2 — 4 X — Z S1, S2	S3 — S10 5 — 12 S11 — S20	21 — 69	36	30 — 39
	Turkey, Kuwait, U.A.E., Oman, Jordan	2 — 4	5 — 12	21 — 69		
	Australia	0 — 5	5A — 11	28 — 69		
	Indonesia	2, 3	4 — 11	21 — 69		
PAL I	United Kingdom, Hong Kong	—	—	21 — 69	36	30 — 39
	Ireland	A — C, S1, S2	D — G, H, J S3 — S20	21 — 69		
	South Africa	—	4 — 11, 13	21 — 69		
PAL D/K	China	1 — 5	6 — 12	13 — 56	24 — 25	22 — 26
SECAM B/G	Saudi Arabia, Iran, Iraq, Libya, Egypt, Morocco, Greece, Syria	2 — 4	5 — 12	21 — 69	36	30 — 39
SECAM D/K	East Europe, Former Soviet Union	1 — 5	6 — 12	21 — 69	36	30 — 39
NTSC 3.58	USA	2 — 6 A-8 — A-6, A-5 — A-2	7 — 13 A — W	14 — 78	34	26 — 38
	Japan	1 — 3	4 — 12	13 — 62	33	25 — 37

Before Playback

You need to set COLOR SYSTEM SELECT according to the tape to be played back and the TV to be used. Set COLOR SYSTEM SELECT (AUTO/NTSC 3.58 /NTSC 4.43) and COLOR SYSTEM SELECT (NTSC PB ON PAL TV) as indicated in the following list.

– : The playback picture cannot be viewed.

TV to be used	Tape to be played back		
	PAL	MESECAM	NTSC
PAL		—	
SECAM	—		—
NTSC3.58	—	—	
NTSC4.43	—	—	

Notes

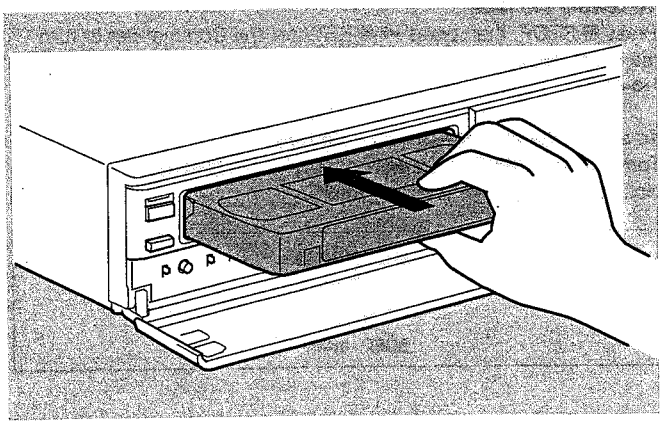
- When playing back tapes recorded with the NTSC3.58 and NTSC4.43 systems, the picture may be shrunk vertically or may not appear on the screen depending on the TV used.
- If your TV does not conform to the color system of the program to be recorded or the tape to be played back, you cannot view the program to be recorded or played back.

Playback

To be continued ►

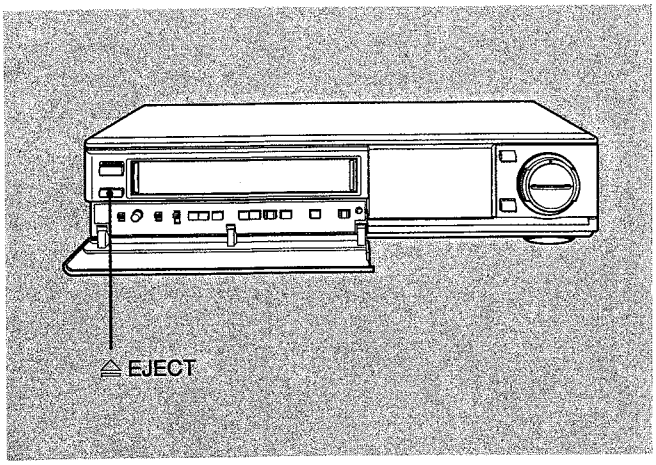
This section shows you how to insert a video cassette into the VTR and to play it back.

Loading a Video Cassette



Insert the cassette into the cassette compartment by gently pressing the center of the back of the cassette with the arrow on the top.
When the cassette is loaded, the VTR automatically turns on.
If the loaded cassette has its safety tab removed (see "Protecting your cassette from being erased"), the playback starts automatically.

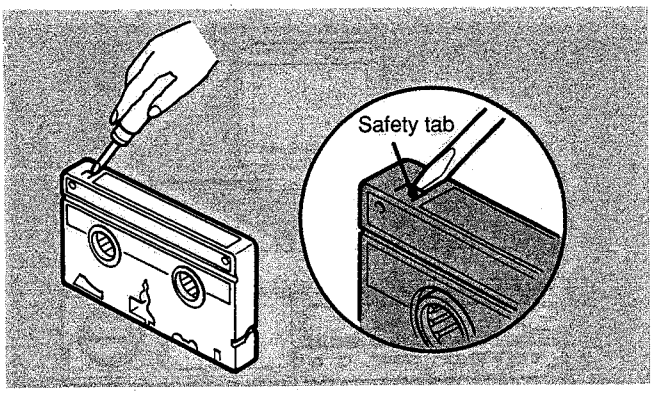
Ejecting the video cassette



Press ⏏ EJECT on the VTR.
You can eject the cassette even when the power is off.
When you press ⏏ EJECT, the VTR turns on automatically.
After ejecting the cassette, the VTR turns off again.

Protecting your cassette from being erased

The cassette is provided with a safety tab. To avoid accidental erasure, remove the safety tab using a screwdriver or a similar tool as shown.



If you want to record again on the cassette without its safety tab, simply cover the safety tab hole with a piece of plastic tape.

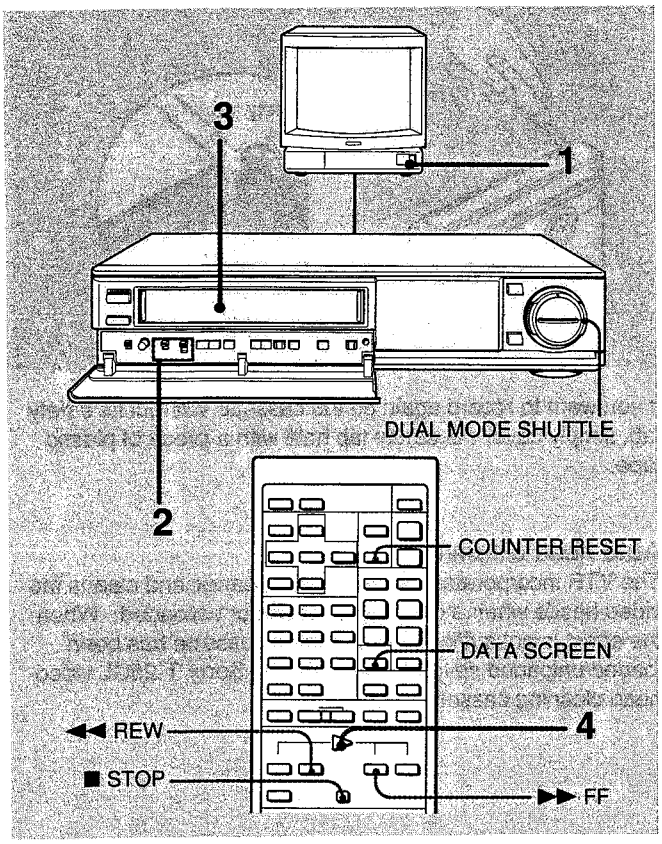
Auto head cleaner

The VTR incorporates the auto head cleaner and cleans the video heads when a cassette is loaded or unloaded. When the effect is not sufficient even after a cassette has been loaded/unloaded several times, use the Sony T-25CL video head cleaning cassette.

Playback

Playing Back the Cassette

Before playing back the cassette, check that all the connections are made correctly.



1. Turn on the TV. If you have made a VTR-TV connection using the aerial sockets, select the program position for video playback.
If you have made it using the video/audio jacks, select the input for the VTR.

2. Set COLOR SYSTEM SELECT to the appropriate position according to a tape to be played back or the TV to be used. (See page 12.)

3. Insert a cassette.
The VTR turns on automatically. If the safety tab of the cassette is removed, playback also starts automatically.

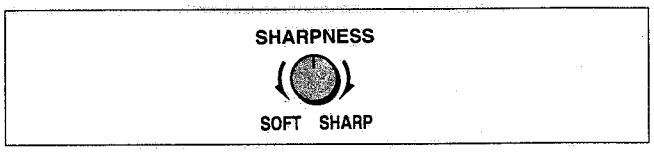
4. Press ▷ PLAY.
Playback starts.
When the tape reaches to the end, the VTR automatically rewinds the tape to the beginning (auto rewind). The power of the unit remains on.

To stop playback
Press ■ STOP.

To rapidly advance the tape
Press ■ STOP, then press ▶▶ FF on the Commander or turn the DUAL MODE SHUTTLE ring on the VTR clockwise (▶▶).

To rewind the tape
Press ■ STOP, then press ◀◀ REW on the Commander or turn the DUAL MODE SHUTTLE ring on the VTR counterclockwise (◀◀).

To adjust the sharpness of the picture
Turn the SHARPNESS control on the VTR to SHARP for a sharper picture or to SOFT for a softer picture.

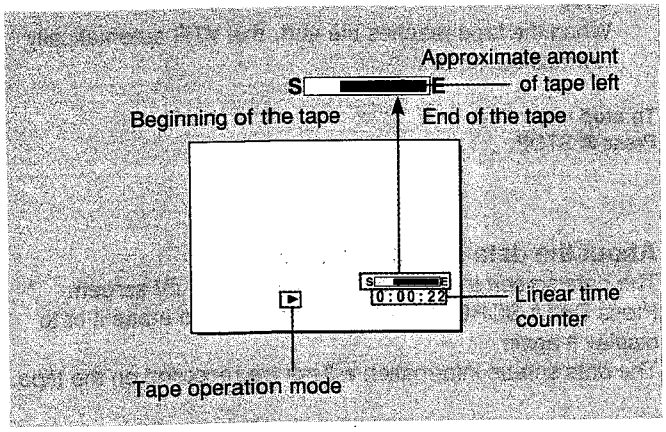


Playing back a rental video

Set the RENTAL PICTURE ON/OFF switch on the VTR to ON.
Noise will be reduced on the playback picture.
After playing it back, set the switch to OFF.

Data screen information

The following information (data screen) appears on the TV screen. The remaining tape length indicator helps you to know the approximate amount of the tape left.



To erase the data screen information or to display it again
Press DATA SCREEN on the Commander.

Notes on the remaining tape length indicator

- The remaining tape length indicator only shows the approximate amount of tape left.
- It may not operate properly when a short tape, such as E-30, or non-standardized tape is loaded.
- The data screen is not displayed during still mode or slow motion playback.

Resetting the linear time counter

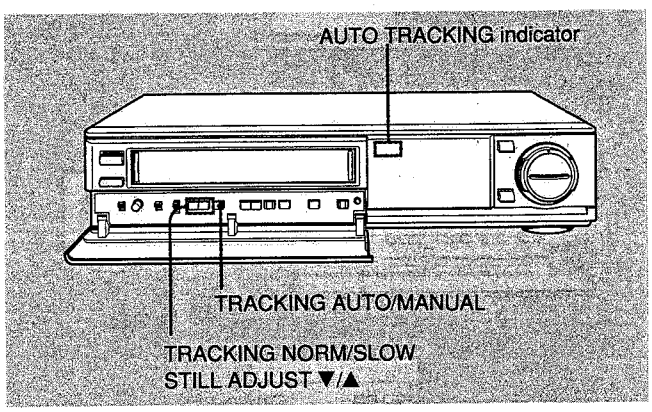
The linear time counter on the data screen and in the display window indicates the approximate running time of the tape. It helps you to locate a certain scene after playback. Press COUNTER RESET on the Commander to set the counter to the counter zero position ("0:00:00" on the data screen and "0H00M00S" in the display window) before playing back the tape (the tape counter is automatically reset to zero whenever a cassette is inserted). The VTR will keep counting the length of the tape being played back. Note, however, that the time counter will not count the portions without video signals recorded.

Adjusting Picture Manually

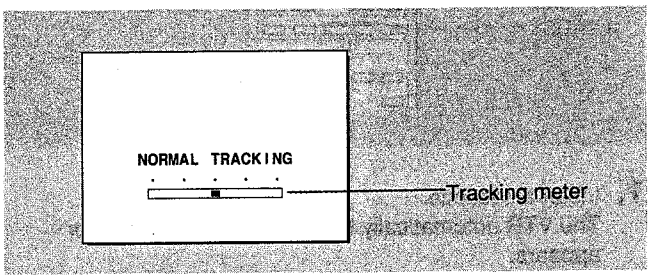
The tracking condition is automatically adjusted on this VTR. The AUTO TRACKING indicator blinks while the VTR is searching for the best tracking condition and lights when optimum playback picture is obtained. The automatic tracking control is activated in the following conditions:

- when you load a cassette.
- when the tracking condition is poor while playing back a tape.
- when you press TRACKING AUTO/MANUAL after the picture is adjusted manually.

However, if streaks or snow noise appear on the picture, adjust the tracking condition as follows:



Press TRACKING NORM/SLOW and STILL ADJUST ▼/▲ to obtain the best possible picture.
The tracking meter appears on the TV screen and the AUTO TRACKING indicator goes off.



To return to the auto tracking adjustment
Press TRACKING AUTO/MANUAL on the VTR or AUTO TRACKING on the Commander.

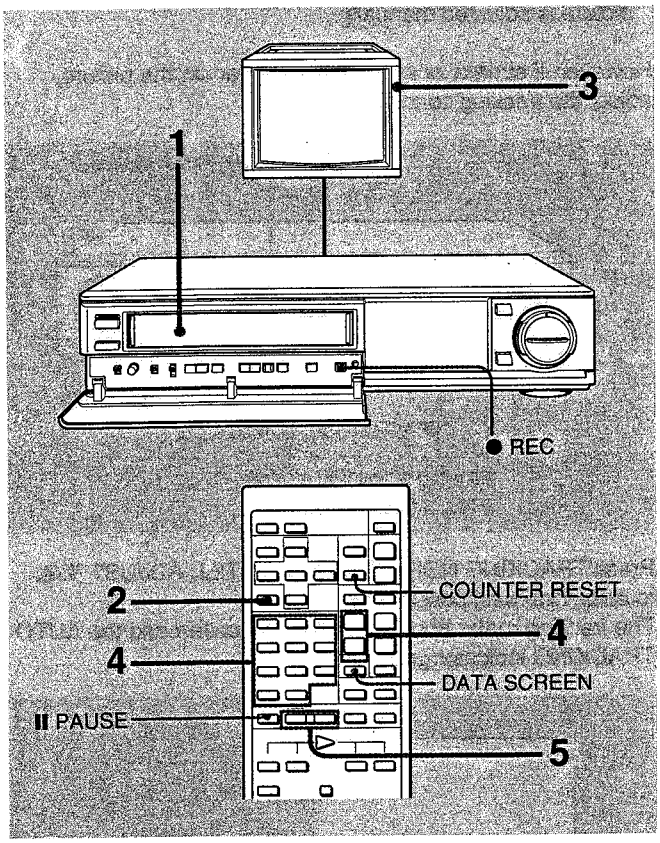
Notes on manual tracking adjustment

- Tracking adjustment may not be possible when the recording condition of the tape is very poor.
- The tracking meter will not appear if the data screen information is erased by pressing DATA SCREEN on the Commander.

Recording

This section shows you how to record TV programs. You can also watch a TV program on the TV screen while recording another.
Before recording, check to see that all the connections have been made correctly and that the COLOR SYSTEM SELECT and TV SYSTEM settings have been made correctly (see page 11).

Recording TV Programs



1. Insert a cassette.
The VTR automatically turns on. The ⊡⊡ indicator appears.

2. Press INPUT SELECT to light PROG in the display window of the VTR.

3. Turn on the TV. If you have made a VTR-TV connection using the aerial socket, select the program position for video playback. If you have made it using the video/audio jacks, select the input for the VTR.

4. Select the program position you want to record with PROG +/– or number buttons.
To select the program number over 9 with the number buttons, press -/- - first and then the ten's digit and the unit's digit.

5. Press ● REC while pressing the recording auxiliary button.
Recording starts and the REC indicator lights.
You can also start recording by pressing ● REC on the VTR.
When the tape reaches the end, the VTR automatically rewinds the tape.

To stop recording
Press ■ STOP.

About the data screen information

The data screen information appears on the TV screen. Press DATA SCREEN on the Commander to erase it or to display it again.
The data screen information will not be recorded on the tape.

Notes on the remaining tape length indicator

- The remaining tape length indicator only shows the approximate amount of tape left.
- It may not operate properly when a short tape, such as E-30, or non-standardized tape is loaded.

If you want to operate the TV using the Commander
Use the buttons for TV. You can select the TV channel with PROG +/–, select the input for the VTR with TV/VIDEO, and adjust the volume with VOL +/–.

To stop the tape momentarily during recording

Press II PAUSE.
To resume recording, press II PAUSE again.
You can cut out the unwanted scene during recording using this button.

1. Press II PAUSE when an unwanted scene appears on the screen. Recording pauses.
2. Press II PAUSE again to resume recording at the desired scene.

Resetting the linear time counter

The linear time counter on the data screen and in the display window indicates the approximate running time of the tape. It helps you to locate a certain scene after recording. Press COUNTER RESET on the Commander to set the counter to the counter zero position ("0:00:00" on the data screen and "0H00M00S" in the display window) before recording the tape (the tape counter is automatically reset to zero whenever a cassette is inserted). The VTR will keep counting the length of the tape being recorded.
Note, however, that the time counter will not count the portions without video signals recorded.

Watching a TV program while recording another

Select the program position of the TV program you desire on the TV.

Timer-Activated Recording

To be continued ►

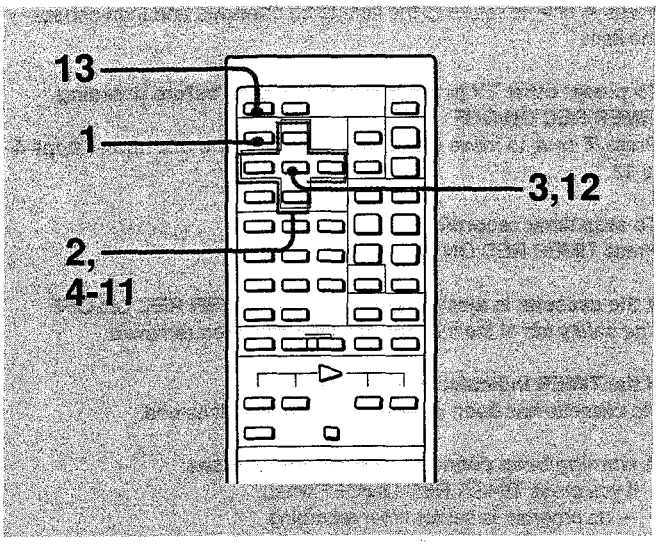
You can preset up to six TV programs within one year (between today and one day before the same day in the next year).
This section shows you how to preset, on the timer of the VTR, the recording turn-on and turn-off time for the TV programs to be recorded. You can also check and change the timer settings if you want.

Setting the Timer

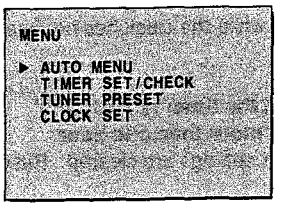
To assure your presetting, check the followings before setting the timer:

- You have turned on the TV and selected the program position for video playback or the input for the VTR.
- The date and clock show the present time (see "Setting Date and Clock").
- The cassette with its safety tab is loaded in the VTR.

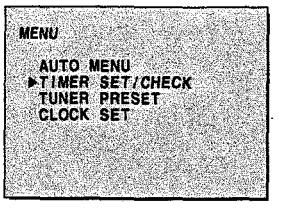
Example:
Records the TV program broadcast from 21:00 to 22:55 on 8th November, on program position 8.



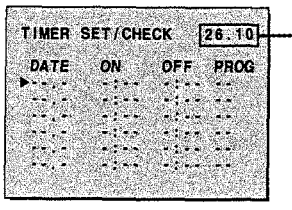
1. Press MENU. The main MENU appears on the TV screen.



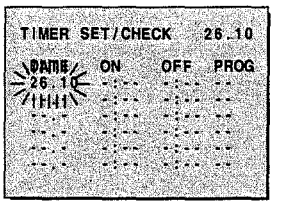
2. Press ▲ or ▼ to move the cursor (► mark) to TIMER SET/CHECK.



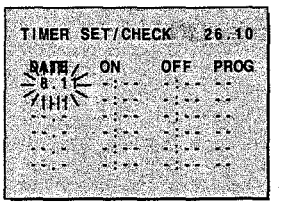
3. Press EXECUTE.
The TIMER SET/CHECK menu appears.



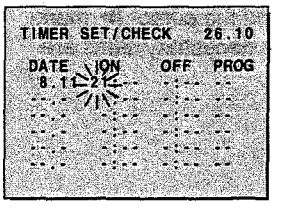
4. Press ►.
Today's date blinks. If the date is not correct, reset the clock. You can set the blinking item.



5. Press ▼ or ▲ until "8.11" appears.

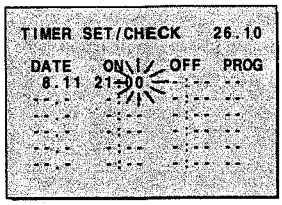


6. Press ► to blink the turn-on hour section under ON, and then press ▲ or ▼ until "21" appears.

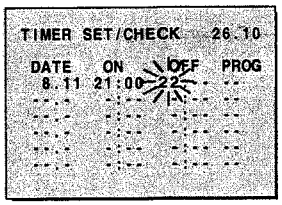


Timer-Activated Recording

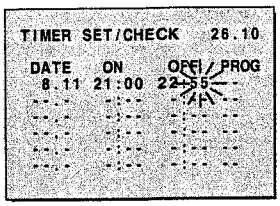
7. Press ▶ to blink the turn-on minute section, and then press ▲ or ▼ until "00" appears.



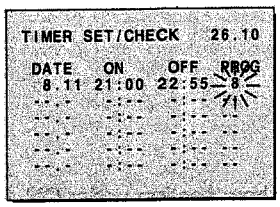
8. Press ▶ to blink the turn-off hour section under OFF, and then press ▲ or ▼ until "22" appears.



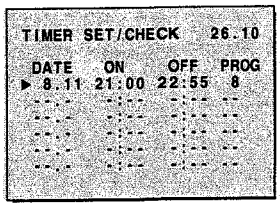
9. Press ▶ to blink the turn-off minute section, and press ▲ or ▼ until "55" appears.



10. Press ▶ to blink the program position section under PROG, and then press ▲ or ▼ until "8" appears.
If you record the input source from the LINE IN jacks, press INPUT SELECT to display LINE.



11. Press ▶.
All the items stop blinking and the cursor (▶ mark) appears showing that all the necessary items are entered.

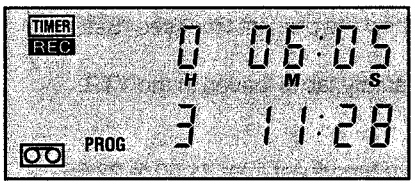


12. Press EXECUTE.

Note
The TIMER indicator blinks if the turn-on time is within 5 minutes.

13. Press TIMER REC ON/OFF.
The VTR turns off and enters the timer recording standby mode. The TIMER indicator appears in the display window.

The VTR automatically turns on, starts recording at the selected time, and turns off after recording ends.
During timer recording, the TIMER and REC indicators light in the display window.



To change the setting before completing it
Press ◀ or ▶ to return to the item to be changed and then correct the item.

To preset other TV programs successively before pressing TIMER REC ON/OFF
Press ▼ or ▲ to move the cursor to the next line and repeat steps 4 to 12.

To stop timer recording
Press TIMER REC ON/OFF.

If the cassette is ejected after pressing TIMER REC ON/OFF
The safety tab of the inserted cassette has been removed.

If the TIMER indicator does not appear
No cassette has been inserted or the tape is at its end.

A warning beep sounds in the following cases:
- If you press TIMER REC ON/OFF when
  — no program is set for timer recording
  — the inserted tape is at its end
  — the safety tab of the inserted tape has been removed
  — no cassette is inserted
- If you try to set for timer recording during timer recording
- If you try to reset the clock during timer recording
- If you try to set for timer recording while the clock has not been set

If the power is interrupted while in the timer recording standby/timer recording mode for more than one hour
In the recording standby mode, timer settings are cleared. Reset the settings from the beginning.
In the timer recording mode, the recording stops and the VTR turns off.
If the power interruption lasts for less than one hour, the VTR returns to the original mode when the power is recovered.

To be continued ►

Using the VTR before timer-activated recording starts

Press TIMER REC ON/OFF so that the TIMER indicator in the display window is turned off, then turn on the power of the VTR.
After using the VTR, be sure to press TIMER REC ON/OFF to display the TIMER indicator.

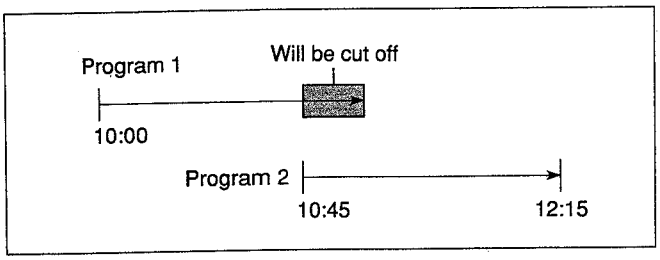
Daily recording

You can preset to record the same program each day of the week. Press ▼ until "EVERY" appears in step 5 of "Setting the Timer" on page 17.

When the timer settings overlap or coincide

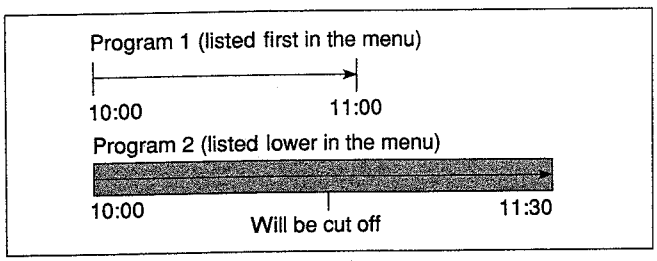
■ If the setting of two programs overlaps

The recording of the following program will begin automatically before the preceding program ends as shown.



■ If the turn-on time of two programs is the same

The VTR will record the program listed first in the TIMER SET/CHECK menu. The program listed lower in the menu will not be recorded.

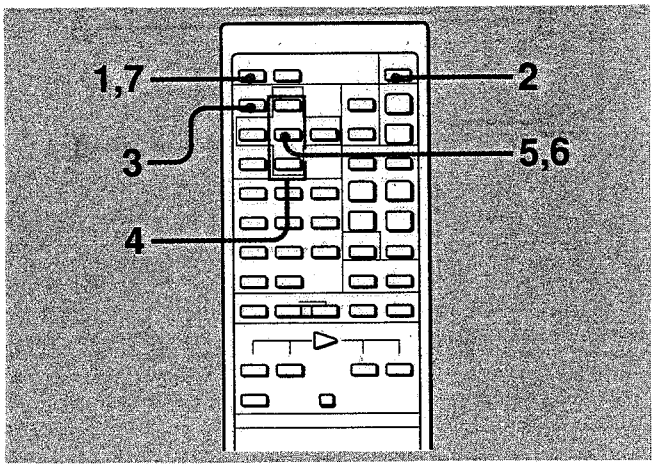


■ If the turn-off time of program 1 and the turn-on time of program 2 are the same

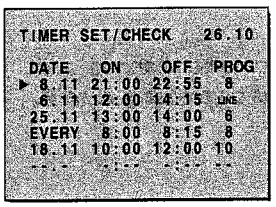
The recording of two programs will be correctly made.

Checking the Timer Settings

You can check the current timer settings, while in the timer standby mode, by displaying the TIMER SET/CHECK menu on the screen.



1. Press TIMER REC ON/OFF to turn off the TIMER indicator in the display window.
2. Turn on the VTR.
3. Press MENU to display the main MENU.
4. Press ▲ or ▼ to move the cursor to TIMER SET/CHECK.
5. Press EXECUTE.
   The TIMER SET/CHECK menu appears.
   You can now check the contents of the current timer settings.



6. Press EXECUTE.
   The original screen appears.
7. Press TIMER REC ON/OFF.
   The VTR re-enters the timer recording standby mode.

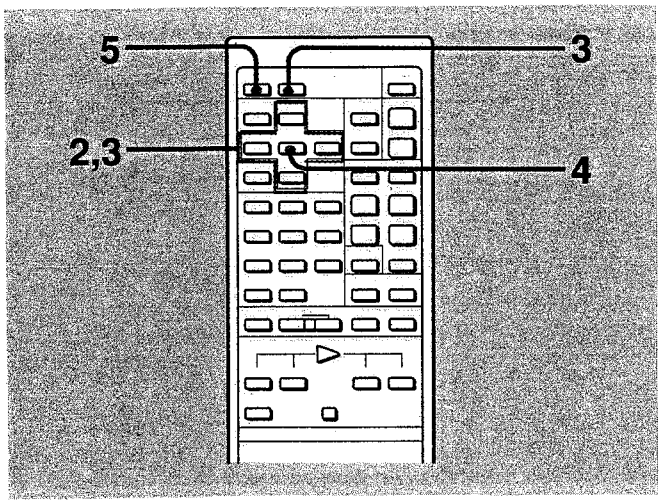
To check the timer settings during timer recording

Follow steps 3 to 6.

Timer-Activated Recording

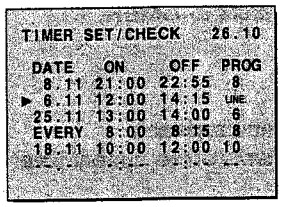
Changing or Erasing the Timer Settings

You can change or erase the timer settings while checking the TIMER SET/CHECK menu on the screen.



1. Display the TIMER SET/CHECK menu on the TV screen. (See steps 1 to 4 of "Checking the Timer Settings".)

2. Press ▲ or ▼ to move the cursor to the setting you want to change or erase.



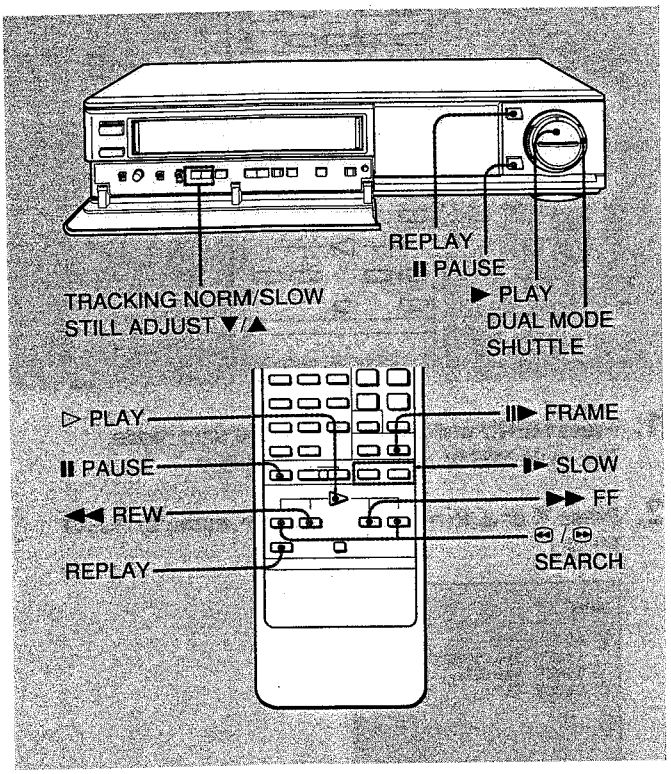
3. **To change the setting**
Press ◀ or ▶ to blink the item to be changed, and make the necessary changes by pressing ▲ or ▼.
To erase the setting
Press TIMER CLEAR.

4. Press EXECUTE.
The original screen appears.

5. Press TIMER REC ON/OFF.
The VTR re-enters the timer recording standby mode.

Variable Speed Playback

You can play back the picture at various speeds: a still; slow motion; the normal speed; and a high speed playback (picture search), in forward direction, a high speed playback in the reverse direction. You can enjoy the variable speed playback either by using the buttons on the Commander or the DUAL MODE SHUTTLE ring on the VTR.



Still picture

During playback, press II PAUSE.
To resume normal playback, press II PAUSE again or press ▷ PLAY.
When the pause mode lasts for more than approximately 5 minutes, the VTR will automatically enter the normal playback mode.

If bands appear on the top or bottom of the screen in the still mode
Change to the slow motion playback mode and adjust the picture with TRACKING NORM/SLOW and STILL ADJUST ▼/▲.

If the picture is shaking while in the still mode
Adjust the picture with TRACKING NORM/SLOW and STILL ADJUST ▼/▲.

Picture search

During playback, keep pressing ▶▶ FF (forward direction) or ◀◀ REW (reverse direction). A high-speed picture without sound appears on the TV screen.
To resume normal playback, release the button at a desired scene. Picture search can also be done by turning the DUAL MODE SHUTTLE ring on the VTR.

Locked picture search

During playback, press ⏪ SEARCH (reverse direction) or ⏩ SEARCH (forward direction). A high-speed picture appears on the screen even when you release the button. To resume normal playback, press ▷ PLAY.

Slow-motion picture

During playback or in the still mode, press I▶ SLOW + or – on the Commander. Change the slow-motion speed with the + (to increase) or – (to decrease) button.
The slow-motion picture is also obtained by turning the DUAL MODE SHUTTLE ring on the VTR to 1/5.

Replay

During playback, press REPLAY on the Commander or the VTR once. The VTR stops and rewinds the tape for 3 seconds of the linear time counter, then plays it back in slow-motion playback mode. Press the button twice to rewind and replay the tape for 6 seconds of the linear time counter in slow-motion playback mode.

If streaks or noise bands appear during slow-motion playback
Adjust the picture with TRACKING NORM/SLOW and STILL ADJUST ▼/▲.

Frame-by-frame picture

In the still mode, press II▶ FRAME on the Commander to advance the picture one frame.
To resume normal playback, press ▷ PLAY or II PAUSE.

Watching the picture momentarily during the fast-forward or rewind

During fast-forward, keep pressing ▶▶ FF on the Commander or turn the DUAL MODE SHUTTLE ring clockwise to ▶▶.
During rewind, keep pressing ◀◀ REW on the Commander or turn the DUAL MODE SHUTTLE ring counterclockwise to ◀◀.
You can see the high-speed playback picture as long as you press the button or you hold the ring in that position.
To return to the previous mode, release the button or the ring.

Note on variable speed playback
Streaks or noise cannot be eliminated completely in the reverse playback.

Assigning a Desired Operation — AUTO MENU

You can select, in the AUTO MENU, a series of automatic tape operations.
It helps you to perform a certain tape transport job without your attendance. This section shows what you can do with the AUTO MENU and how to assign the desired function.

What You Can Do with the AUTO MENU

The functions included in the AUTO MENU are as follows:

■ **PLAY - REW - POWER OFF**
Plays back the tape, rewinds the tape when it reaches the end, and turns the power off.

■ **GO TO ZERO - STOP**
Searches for the counter zero point and stops.

■ **GO TO ZERO - PLAY**
Searches for the counter zero point and starts the playback.

Note on "GO TO ZERO-STOP" and "GO TO ZERO-PLAY"
Before assigning these functions, press COUNTER RESET at the desired scene during recording or playback and stop the tape after recording or playback.
If the EXECUTE button is pressed at the counter zero point, a beep alerts you showing that the operation does not function.

■ **GO TO REC START - PLAY**
Searches for the recording start point and starts the playback.

Note
You cannot assign this function if the recording start point data has been erased by:
- Pressing COUNTER RESET
- Ejecting and re-inserting the cassette

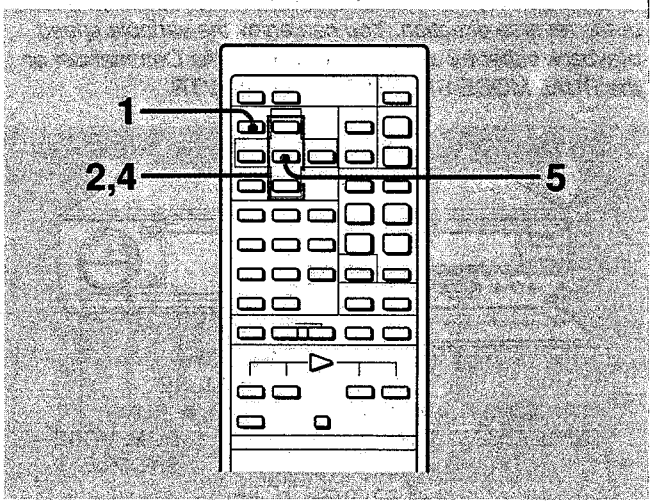
■ **REW - POWER OFF**
Rewinds the tape to the beginning and turns the power off.

■ **REW - EJECT - POWER OFF**
Rewinds the tape to the beginning, ejects the cassette, and turns off the power.

■ **REW - PLAY**
Rewinds the tape to the beginning and starts the playback.

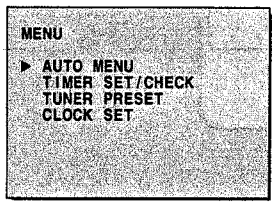
■ **REW - TIMER REC**
Rewinds the tape to the beginning and enters the timer recording standby mode for timer recording when the timer is preset. A beep alerts you when the timer is not preset.
A cassette with its safety tab removed will be ejected.
When the VTR is in the timer recording standby mode, you can assign this function after cancelling the standby mode by pressing TIMER REC ON/OFF, and then turning on the VTR.

Assigning Your Desired AUTO MENU Function

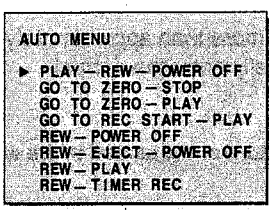


1. Press MENU while the VTR is in the stop mode.
The main MENU appears on the screen.

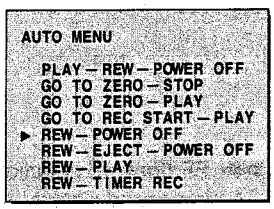
2. Press ▼ or ▲ to move the cursor (▶ mark) to AUTO MENU.



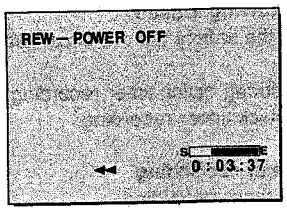
3. Press EXECUTE.
The AUTO MENU will appear.



4. Press ▼ or ▲ to move the cursor to your desired AUTO MENU function.



5. Press EXECUTE.
The selected operation will begin.
The selected operation mode will be superimposed on the TV screen for a few seconds. The AUTO indicator lights in the display window during the AUTO MENU operation.

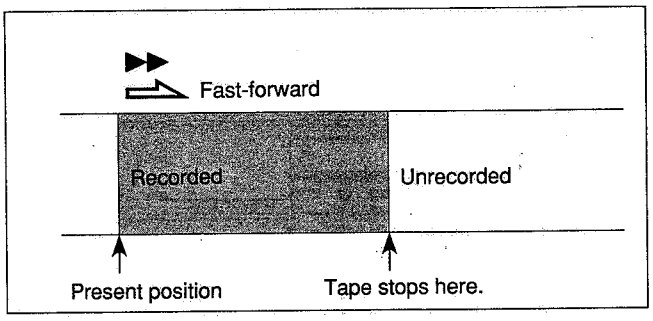


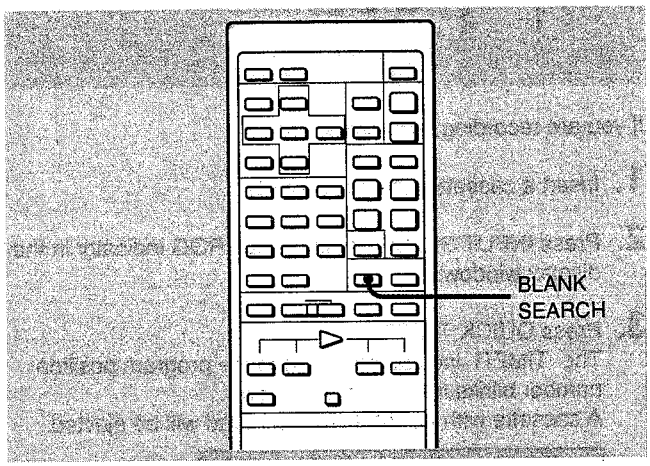
To return to the previous screen without executing any AUTO MENU operation
Press MENU instead of EXECUTE in step 5.

Notes on AUTO MENU operation
- You cannot assign the AUTO MENU operation if the VTR is in modes other than the stop mode. (A beep sounds.)
- If a beep sounds when you press EXECUTE, no cassette is inserted.

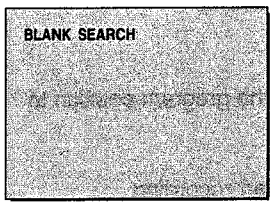
Blank Search Function

The VTR searches for the unrecorded (blank) portion of the tape and stops automatically with this function.
You can use this function if you want to start recording again at the end of the previous recording.





Press BLANK SEARCH in the stop or playback mode.
During searching, the AUTO indicator will appear in the display window and BLANK SEARCH is superimposed on the TV screen.

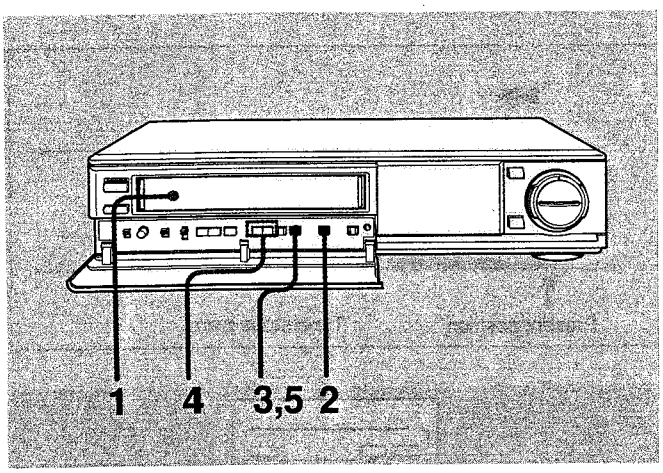


The tape advances rapidly and automatically stops at the beginning of the next blank portion.

Notes
- If a blank tape or a tape with no blanks is used, the VTR searches for the blank all the way to the tape end and then starts searching towards the beginning of the tape.
  Searching stops at the beginning of the tape.
- The stopping position may vary slightly.

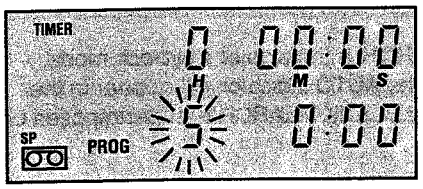
Quick-Timer Recording

If you want to start timer recording immediately, use the quick-timer recording function. You can set the recording duration in units of 30 minutes, up to 8 hours.

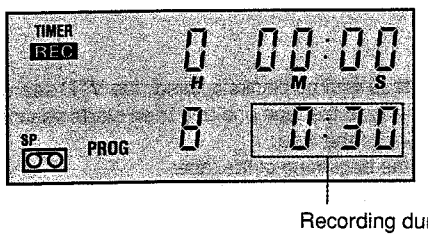


If you are recording, skip steps 1 to 3.

1. Insert a cassette with a safety tab.
2. Press INPUT SELECT to light the PROG indicator in the display window.
3. Press QUICK TIMER.
   The TIMER indicator lights, and the program position number blinks in the display window.
   A cassette with its safety tab removed will be ejected.



4. Press PROGRAM +/– to select the grogram position to be recorded.
5. Press QUICK TIMER again to start recording.
   Each press of the button increases recording duration in units of 30 minutes.



Recording duration

The recording duration decreases minute by minute until 0:00 appears, and then the VTR turns off automatically.

To stop quick-timer recording
Press TIMER REC ON/OFF.

To extend the recording duration during recording
Press QUICK TIMER desired number of times.
One press of the button increases the duration by 30 minutes.

A warning beep sounds in the following cases:
- If you press QUICK TIMER when the safety tab of the cassette is removed.
- You try to set for timer recording during quick timer recording.
- You try to reset the clock during quick timer recording.

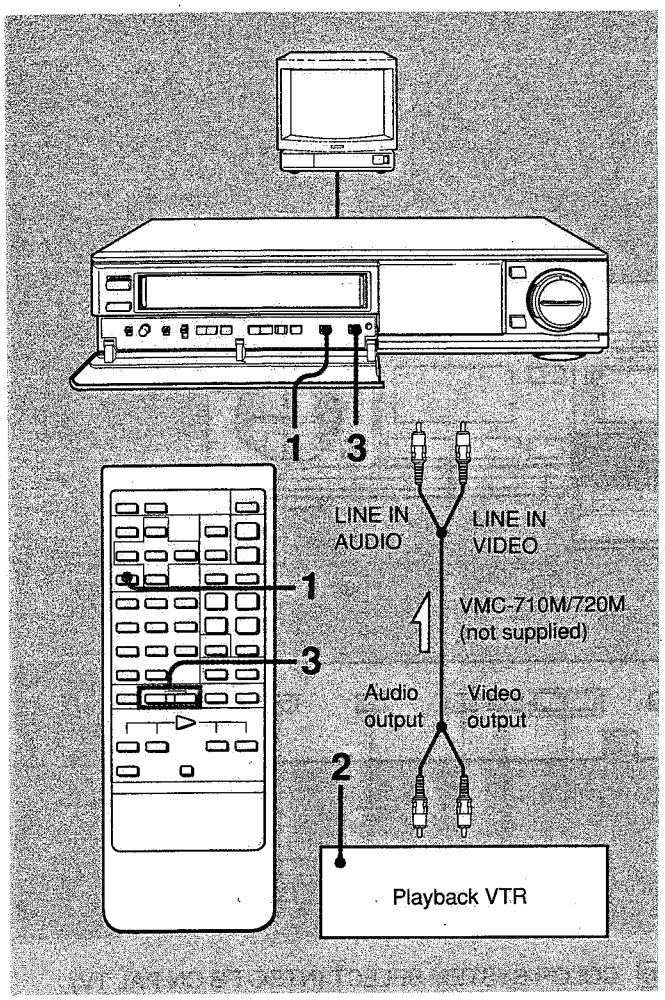
Buttons operable during quick timer recording
- TIMER REC ON/OFF stops quick timer recording.
- QUICK TIMER changes recording duration.
- COUNTER RESET resets the counter to zero.
- MENU displays the TIMER SET/CHECK menu to check the preset timer settings.

If a power interruption occurs during quick timer recording
Recording will stop and the VTR turns off. If the power interruption lasted for less than one hour and recovered within the quick timer duration, recording will resume from that instant.

Editing with Another VTR

Connect this VTR to another VTR using the VIDEO/AUDIO jacks. If the TV is connected to the LINE OUT AUDIO/VIDEO jacks of this VTR, disconnect it, and then reconnect it to another VTR.

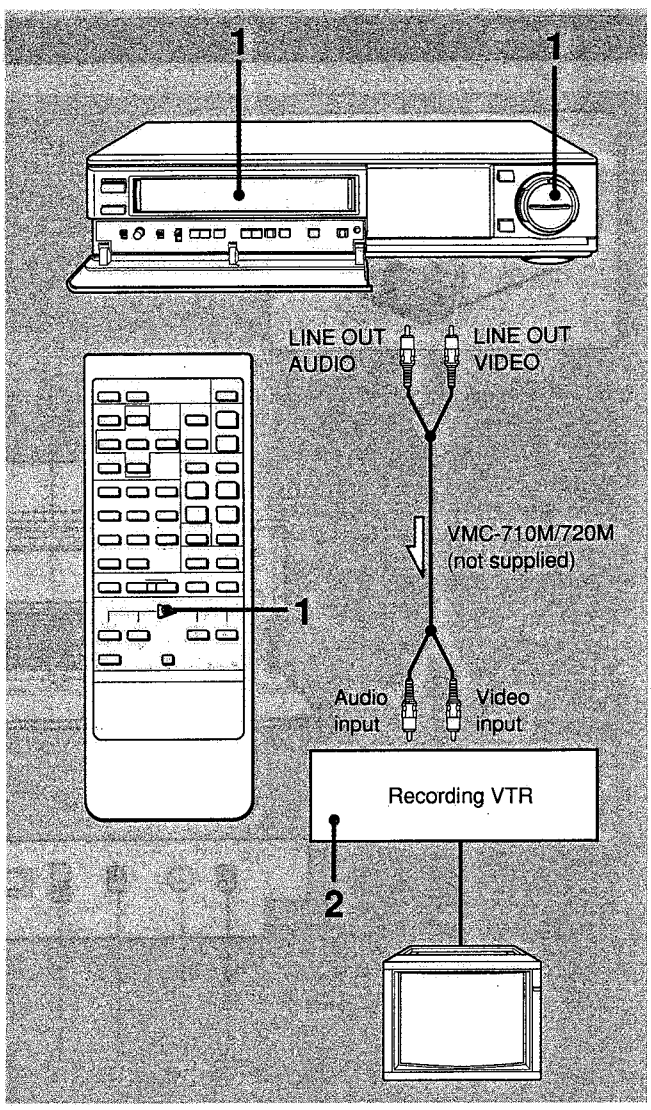
Editing Tapes from Another VTR



How to operate

1. Press INPUT SELECT so that the LINE indicator lights in the display window.
2. Insert a source cassette into another VTR and start playback.
3. Start recording with this VTR.

Editing Tapes onto Another VTR



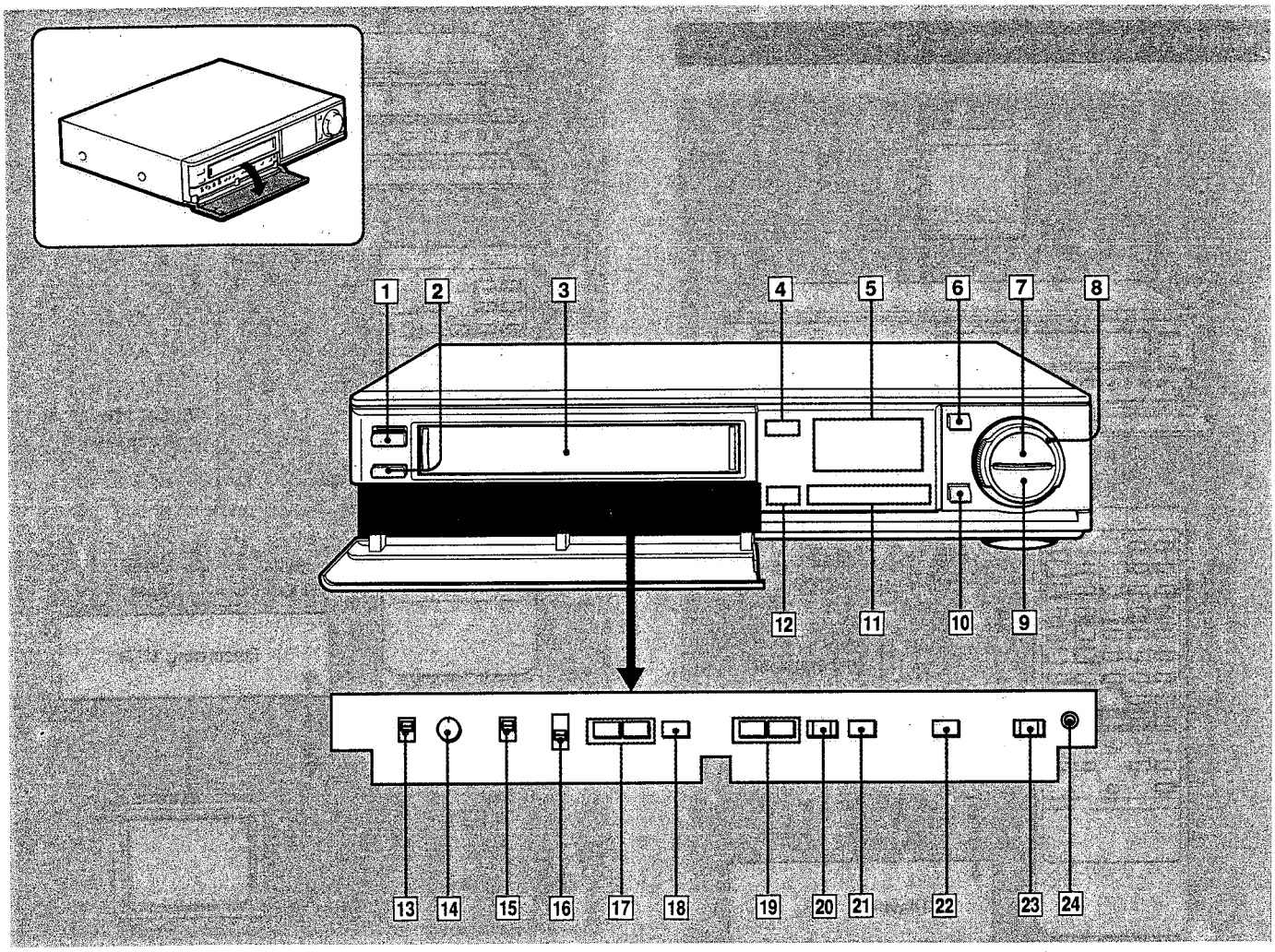
How to operate

1. Insert a source cassette into this VTR and start playback.
2. Set the input selector to LINE and start recording with another VTR.

Labeling Parts and Controls

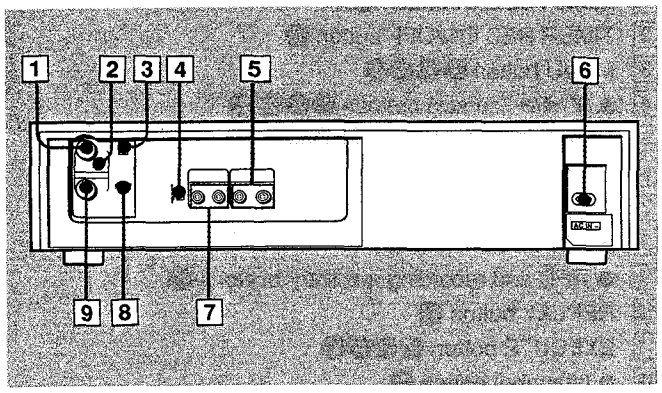
Refer to pages in circles for details.

Front Panel



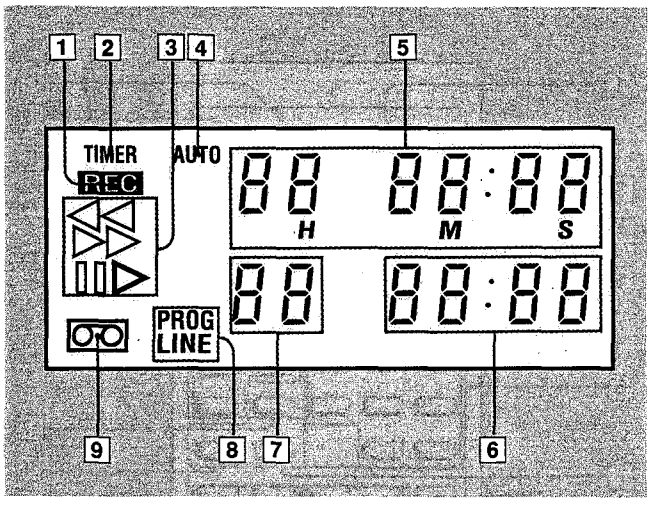
1 ON/STANDBY button and indicator
2 ⏏ EJECT button ⓭
3 Cassette compartment ⓭
4 AUTO TRACKING indicator ⓯
5 Display window
6 REPLAY button ㉑
7 ▷ PLAY button ⓮㉑
8 DUAL MODE SHUTTLE ring ⓮㉑
9 ■ STOP button ⓮
10 ❚❚ PAUSE button ㉑
11 COLOR SYSTEM indicators ⓫
12 Remote sensor ❺
13 RENTAL PICTURE ON/OFF switch ⓮
14 SHARPNESS control ⓮
15 COLOR SYSTEM SELECT (NTSC PB ON PAL TV) switch ⓬
16 COLOR SYSTEM SELECT (AUTO(PAL/MESECAM)/NTSC3.58/ NTSC4.43) switch ⓫
17 TRACKING NORM/SLOW and STILL ADJUST ▼/▲ buttons ⓯㉑
18 TRACKING AUTO/MANUAL button ⓯
19 PROGRAM +/– buttons ❾⓰㉔
20 TIMER REC ON/OFF button ⓲
21 QUICK TIMER button ㉔
22 INPUT SELECT button ❽⓰㉔
23 ● REC button ⓰
24 CL (all clear) button ㉚

Rear Panel



1 AERIAL IN socket ❺
2 DX/LOCAL switch ❻
3 TEST SIG. (signal) switch ❻
4 TV SYSTEM select switch ⓫
5 LINE OUT AUDIO/VIDEO jacks ❺㉕
6 AC IN (inlet) ❺
7 LINE IN AUDIO/VIDEO jacks ㉕
8 RF CHANNEL selector ❻
9 AERIAL OUT connector ❺

Indications in the Display Window

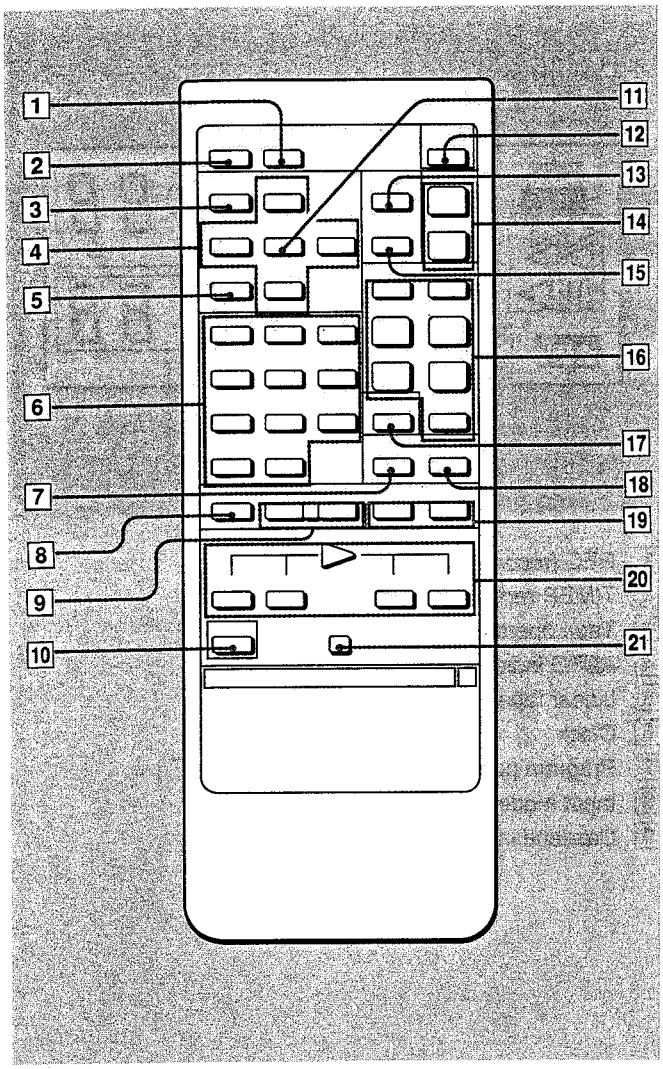


1 REC (recording) indicator
2 TIMER recording indicator
3 Tape operation indicator
4 AUTO indicator
5 Linear tape counter
6 Clock
7 Program position number
8 Input mode indicator
9 Cassette indicator

Labeling Parts and Controls

Remote Commander

The buttons on the Commander with the same name or mark as those on the VTR have the same function.



1 TIMER CLEAR button ⓴
2 TIMER REC ON/OFF button ⓲
3 MENU button ❼❽⓱㉒
4 ▲/▼/◀/▶ (cursor) buttons ❼❽⓱㉒
5 INPUT SELECT button ❽⓰㉔
6 Number buttons ⓰
7 BLANK SEARCH button ㉓
8 ❚❚ PAUSE button ⓰㉑
9 ● REC and recording auxilliary buttons ⓰
10 REPLAY button ㉑
11 EXECUTE button ❼❽⓱㉒
12 ⏻ (standby) button ❽
13 AUTO TRACKING button ⓯
14 PROG (program) +/– buttons ❾⓰㉔
15 COUNTER RESET button ⓯⓰
16 Buttons for TV operation
⏻ (power-on), ⏻ (standby), PROG (program) +/–, VOL (volume) +/–, TV/VIDEO
17 DATA SCREEN button ⓯⓰
18 ❚❚▶ FRAME button ㉑
19 ❚▶ SLOW +/– buttons ㉑
20 Tape transport buttons ⓮㉑
▶ PLAY
▶▶ FF (fast-forward)
◀◀ REW (rewind)
⏮ / ⏭ SEARCH
21 ■ STOP button ⓮⓰

Specifications

System

Format	VHS standard
Video recording system	Rotary 2-head helical scanning system
Audio recording system	Monaural
Video signal	PAL/MESECAM/NTSC3.58/ NTSC4.43
Tape speed	PAL/MESECAM 23.39 mm/sec. NTSC 33.35 mm/sec.
Maximum recording time	PAL/MESECAM 240 minutes with E-240 NTSC 160 minutes with T-160
Fast-forward and rewind time	Approx. 2 min. 30 sec. (with E-180)
Audio frequency response	80 Hz – 10 kHz
Distortion	Less than 3.5%
Wow and flutter	Less than 0.35%

Tuner Section

Tuner system	39-position voltage system tuner
Channel coverage	See page 12.
Antenna	75 ohm antenna terminal for VHF/UHF
RF converter output	UHF channel 30 to 39

Input and Output

Video	LINE IN VIDEO: phono jack 1.0 V ±0.5 V (p-p) 75 ohms, unbalanced, sync negative LINE OUT VIDEO: phono jack 1.0 V (p-p) ±0.2 V (p-p) 75 ohms, unbalanced, sync negative
Audio	LINE IN AUDIO: phono jack More than 50 kilohms, –8 dBs (0 dB = 0.775 V rms) LINE OUT AUDIO: phono jack Load impedance less than 10 kilohms, –8 dBs

Timer Section

Clock	Quartz locked
Time indication	24-hour indication
Timer setting	6 programs for 1 year max.
Power back up	Back-up duration: approx. 1 hour
Tape counter	Linear time counter

General

Power requirements	110 — 240 V AC, 50/60 Hz
Power consumption	23 W
Dimensions	430 × 100 × 362 mm (w/h/d) (17 × 4 × 13 3/8 inches) including projecting parts and controls
Weight	Approx. 5.6 kg (12 lb 6 oz)

Remote Commander

Remote control system	Infrared control
Power requirements	3 V DC, two R6 batteries
Dimensions	62 × 18 × 175 mm (w/h/d) (2 1/2 × 23/32 × 7 inches)
Weight	Approx. 94 g (3 oz) (not including batteries)

Accessories Supplied

Remote Commander with two R6 batteries.....(1)
75-ohm coaxial cable with DIN type connector .....(1)
AC plug adaptor.....(1)

Design and specifications are subject to change without notice.

Troubleshooting

	Symptom	Possible causes and remedies
Power	The ON/STANDBY button does not function.	• The power cord is disconnected. → Connect the power cord. • The VTR is in the timer recording standby mode. → Press TIMER REC ON/OFF, and then press ON/STANDBY.
	The power is turned on, but the unit does not operate.	• The safety device on the unit has activated. → Press CL or turn off the power, disconnect the power cord from the wall outlet, and leave the unit turned off for more than one hour.
	The power is turned on, but no indicators appear in the display window or the indicators are not displayed correctly.	• Press CL or disconnect the power cord from the wall outlet.
Clock and Timer	The clock has stopped and "–:– –" lights.	• There has been a power interruption. → Reset the date, clock, and timer settings.
TV reception and recording	The TV program is not clearly displayed on the TV screen.	• The channel for the program is not correctly tuned on the TV receiver. → See page 8. • The TV signal is too weak. → Adjust the direction of the antenna.
	No picture on the TV screen.	• The program position for the VTR is not correctly tuned on the TV. → See page 6. • The power cord of the VTR is disconnected. → Connect the power cord.
	The picture is received, but no sound is heard.	• You use the VTR preset for the PAL I system in the area other than the PAL I system. → In TUNER PRESET menu, set SYSTEM to OTHERS, and preset the active channels in your area. (See page 9.)
	Recording cannot be made.	• No cassette has been inserted. → Insert a cassette with its safety tab. • The tape is at its end. → Rewind the tape. • INPUT SELECT is not set correctly. → Press INPUT SELECT to light the PROG indicator when recording TV program, the LINE indicator when recording signals from LINE IN AUDIO/VIDEO.
	The desired program cannot be recorded.	• COLOR SYSTEM SELECT switches are not set correctly. → See page 11.
Playback	The playback picture is not clear.	• The program position for video playback is not correctly tuned on the TV receiver. → See page 6. • A tape recorded on another VTR is being played back. → Adjust the tracking with TRACKING NORM/SLOW and STILL ADJUST ▼/▲. • COLOR SYSTEM SELECT switches are not set correctly. → Set COLOR SYSTEM SELECT to proper positions. (See page 12.)

	Symptom	Possible causes and remedies
Playback	The playback picture is not clear.	• The video heads may be dirty. → Clean the heads using the Sony T-25CL video head cleaning cassette. For details on cleaning, refer to the instruction provided with the cleaning cassette. If this cleaning cassette is not available in your area, have the heads cleaned at the nearest Sony facility. (Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.) • The video heads may be worn out. → Consult your nearest Sony facility. • The sharpness of the picture is not adjusted properly. → Adjust SHARPNESS.
	The picture moves vertically in the picture search mode.	• The vertical hold of the TV is not adjusted properly. → Adjust the vertical hold control on the TV.
	Sound drops out.	• The tape is defective. → Use a new tape.
Timer recording	Timer setting cannot be made.	• The current time has not been preset on the clock. → Set the current date and clock.
	The TIMER indicator does not appear even though you press TIMER REC ON/OFF.	• No cassette has been inserted. → Insert a cassette with its safety tab. • The tape is at its end. → Rewind the tape. • No program is set for timer recording. → Set the desired program for the timer recording.
	The cassette is ejected when you press TIMER REC ON/OFF.	• The safety tab of the cassette has been removed. → Cover the safety tab with a plastic tape, or use other cassette.
	Timer recording was not made.	• There was a power interruption of one hour or more. • TIMER REC ON/OFF was not pressed.
Others	Cassette cannot be inserted.	• Another cassette is already inserted. → Eject the cassette within the VTR.
	The Commander does not operate.	• The batteries are exhausted. → Replace the batteries.
	The data screen does not appear.	• The data screen is turned off. → Press DATA SCREEN.
	The linear time counter does not count.	• The video signal is not recorded on the tape. → Use the prerecorded tape.
	The remaining tape length indicator does not operate properly.	• The non-standardized tape is loaded. → Use the standardized tape.
	A mechanical noise is heard in the stop mode.	• When a cassette is inserted and the VTR is left in the stop mode with the power turned on for about 5 minutes, the tape protection mechanism will be activated automatically and a mechanical noise is heard.